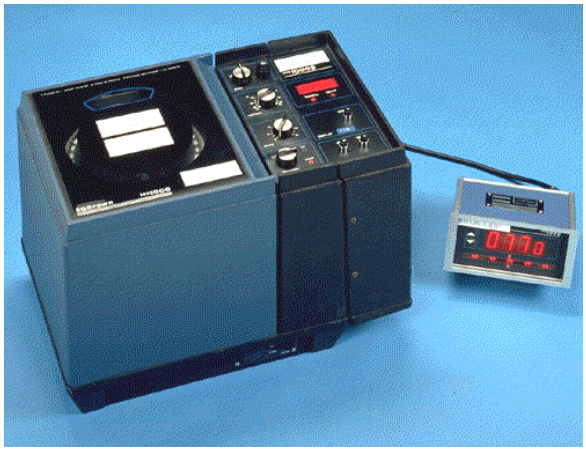
WinFrog Device Group:	**GYRO**
Device Name/Model:	**SG BROWN / SGB1000S**
Device Manufacturer:	**SG BROWN** Tewin Road Welwyn Garden City Hertfordshire AL7 1LR England Telephone 0707 331299 International +44 707 331299 Fax 0707 334429 Telex 23408
Device Data String(s) Output to WinFrog:	"Heading: %05.1lf" SG Brown ASCII Format (See Configuration Details for string contents) Serial data output from Gyro Ports J4, J5, and J6.
WinFrog Data String(s) Output to Device:	WinFrog does not output any data strings to the SG Brown. (See Configuration Details for data strings the SG Brown is capable of accepting)
WinFrog .raw Data Record Type(s):	Type 910 (Type 410 if data repeated 15 times)

DEVICE DESCRIPTION:

The SGB1000S Gyrocompass is one of the most common gyrocompasses used in the hydrographic survey industry. The SG Brown employs the effect of gravity and the earth's rotation on a spinning gyroscope to produce a true North reference. The True heading may be read off the compass card or from the digital display.



SG Brown 1000S Survey Gyro

The normal starting cycle of the instrument is fully automatic and is initiated when the system power supply is switched on. A fail safe control circuit is incorporated which insures that the compass is not damaged after a power failure. When power is restored, the compass will restart automatically and carry out its normal settling program. Note that gyrocompasses require many minutes of "spin up" time before they are able to

output valid heading data. Check the manufacturer's specifications for further information.

The picture above shows the SG Brown with an external digital readout. This readout is not usually required or supplied.

DEVICE CONFIGURATION INSTRUCTIONS:
The SG Brown can output three different format data strings:

- SGB ASCII format
- Robertson format
- NMEA 0183 format

WinFrog's SG Brown driver supports only the SGB ASCII format. If the Robertson format is chosen, select the Robertson AP9 device driver. If the NMEA 0183 format is chosen, use the NMEA Gyro device in WinFrog.

Refer to Configuration Details below for the various dip switch settings, and the communication parameters they represent.

The SBG data output is configurable:

Baud Rate: Configurable 150 to 9600 (9600 recommended)
Data Bits: 8
Stop Bits: 1
Parity: None

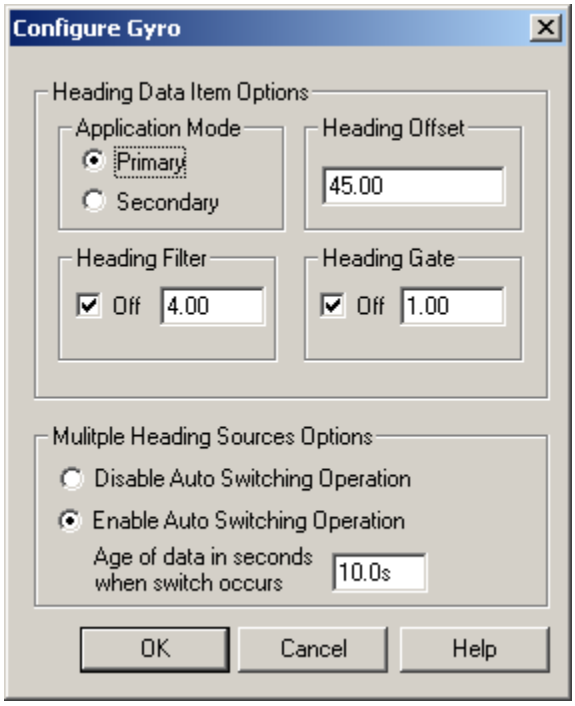
WINFROG I/O DEVICES > CONFIG OPTIONS:
The SG Brown device is added to WinFrog from the Gyro device category. Adding a SG BROWN Gyro device to WinFrog creates a heading Data Item.

When adding the SG BROWN Gyro to WinFrog, the appropriate communication parameters must be set similar to the internal gyro settings.

No configuration is required or available at the "generic" I/O Device window level.

WINFROG VEHICLE TEXT WINDOW> CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTIONS:

Once the SG BROWN Gyro device has been added to a vehicle's device list, it must be edited to suit the application. In the vehicle's device list, highlight the SG Brown Gyro device and click the Edit button. The Configure Gyro dialog window appears as seen below.



Heading Data Item Options:

Application Mode (Primary/Secondary):

Set the type of calculation to Primary or Secondary by selecting the appropriate radio button. Devices set to Primary are used to provide the vehicle heading information. Devices set to Secondary are simply monitored, and are not used in the vehicle's calculations.

Note that WinFrog supports automatic switching from a designated Primary to a Secondary in the case that data from the Primary fails (see Multiple Heading Sources Options).

Heading Offset:

A correction value (as determined from a gyro calibration) can be input in the Heading Offset box. This value is added to the heading value from the SG Brown Gyro to provide a corrected heading for the vehicle. Note that positive or negative values can be entered.

Heading Filter/Heading Gate:

The Heading Filter is used to "smooth" heading values used by the vehicle. The value entered in the Heading Filter indicates the number of headings that will be

used to predict the next heading value. The larger the value entered, the “heavier” the filter will be – i.e. the slower the vehicle’s heading will respond to changes.

The Heading Gate defines a tolerance value to limit the use of anomalies in gyro readings. If the next observed gyro value received falls outside the specified range of predicted values (i.e. plus or minus the entered value), the value will not be used.

Multiple Heading Sources Options:
WinFrog supports automatic switching from a designated Primary source to an alternate Secondary source in the event that the Primary fails. The first Secondary source to receive data after the Primary has failed becomes the alternate Primary providing the heading for the vehicle. When the designated Primary is detected as active again, the alternate Primary source reverts to Secondary and the designated Primary provides the heading data to the vehicle.

If an alternate Secondary fails and there are additional Secondary sources, it in turn is detected by the first of the remaining operational Secondary sources to receive data after the failure at which time this Secondary becomes the alternate Primary.

Note that this option is only available if more than 1 HEADING source is associated with the respective vehicle. Changes made to the Auto Switching options for any one of the HEADING data items are automatically assigned to the others upon exiting this dialog with OK. If the Auto Switching option is enabled and the respective HEADING source has been set to Primary, all others are automatically set to Secondary. The exception to this is when configuring a WinFrog Controlled Remote (WinFrog with a Remote module) from a Controller. In this case, changes made to one HEADING source are not automatically made to other HEADING sources. The operator must explicitly make them for each HEADING source.

This option is not available in the WinFrog Remote package.

Disable/Enable Auto Switching Operation:
Select the mode you wish to operate WinFrog.

Age of data in seconds when switch occurs:
Enter the age of data that is permitted before the source is considered to have failed.

CONFIGURATION DETAILS:
The SG Brown manual should be referred to for details on configuration, maintenance, and packing/unpacking instructions.

SG Brown Output Signals:
Synchro Heading Output (J2 Socket), Stepper S Code Heading Output (J2 Socket), Rate of Turn Output (J3 Socket), & Serial Data Heading Outputs (J4, J5, & J6 Sockets)

Output Signal Formats:
SGB ASCII, Robertson's, NMEA 0183 (Refer to DIP switch configuration table for details on how to select required output signal formats)

SG Brown Input Capabilities:
Latitude can be input manually or as a serially encoded digital signal. Serial Latitude can be received at plug J7 in three different line standards as selected by CPU DIP switch SW2: RS232, RS422, 20mA current loop

Speed can be input manually (maximum of 60 knots), as a series of pulses or as a serially encoded digital signal. Serial Speed data can be received at plug J7 in three different line standards as selected by CPU DIP switch SW2: RS232, RS422, 20mA current loop

Dual In-Line (DIL) Switch Settings:
The panel above the interface connectors on the RH side of the compass should be removed to gain access to the configuration DIL switch packs. The DIL switches should be set for the required compass configurations in accordance with Table 1. If the compass is running, the RESET switch adjacent to the DIL switch packs should be pressed to enter the configuration details.

All compass ancillaries should be connected to the compass in accordance with the list of Interface Connector pin outs given in Table 2.

Voltage-free gyro fail contacts are available at J9 pins 7 & 8. The sense of these contacts depends upon the positions of links fitted on the Regulator Servo Amplifier Board in the compass.

Link 1 made – contacts normally open (close on failure)
Link 2 made – contacts normally closed (open on failure)

Table 1 DIP Switch Settings

Computer PCB Type 927834					Computer PCB Type 928214				
SW	**SETTING**			**PARAMETER**	**SW**	**SETTING**			**PARAMETER**
	1	**2**	**3**	**BAUD RATE**		**1**	**2**	**3**	**BAUD RATE**
	0	0	0	4800		0	0	0	4800
	1	0	0	150		1	0	0	150
	0	1	0	300		0	1	0	300
SW1	1	1	0	600	SW1	1	1	0	600
	0	0	1	1200		0	0	1	1200
	1	0	1	2400		1	0	1	2400
	0	1	1	4800		0	1	1	4800
	1	1	1	9600		1	1	1	9600
	4	**5**	**6**	**OUTPUT FORMAT**		**4**	**5**	**6**	**OUTPUT FORMAT**
	0	0	0	SGB ASCII		0	0	0	SGB ASCII
	1	0	0	ROBERTSON'S 8 BIT		1	0	0	ROBERTSON'S 8 BIT
	0	1	0	ROBERTSON'S 7 BIT + PARITY		0	1	0	ROBERTSON'S 7 BIT + PARITY
SW1	1	1	0	NMEA 0183(HDT)	SW1	1	1	0	NMEA 0183(HDT)
	0	0	1	NMEA 0183(VHW)		0	0	1	NMEA 0183(VHW)
	1	0	1	NMEA 0183(HDT) + CHECKSUM		1	0	1	NMEA 0183(HDT) + CHECKSUM
	0	1	1	NMEA 0183(VHW) + CHECKSUM		0	1	1	NMEA 0183(VHW) + CHECKSUM
	1	1	1	ILLEGAL SETTING		1	1	1	ILLEGAL SETTING
	7	**8**		**LATITUDE INPUT**		**7**	**8**		**LATITUDE INPUT**
	0	0		OFF		0	0		OFF
SW1	1	0		NMEA 0183	SW1	1	0		NMEA 0183
	0	1		NMEA 0183 + CHECKSUM		0	1		NMEA 0183 + CHECKSUM
	1	1		ILLEGAL SETTING		1	1		ILLEGAL SETTING
	1	**2**	**3**	**SPEED INPUT**		**1**	**2**	**3**	**SPEED INPUT**
	0	0	0	OFF		0	0	0	OFF
	1	0	0	PULSE 100/NM		1	0	0	PULSE 100/NM
	0	1	0	PULSE 200/NM		0	1	0	PULSE 200/NM
SW2	1	1	0	PULSE 400/NM	SW2	1	1	0	PULSE 400/NM
	0	0	1	NMEA 0183		0	0	1	NMEA 0183
	1	0	1	NMEA 0183 + CHECKSUM		1	0	1	NMEA 0183 + CHECKSUM
	0	1	1	ILLEGAL SETTING		0	1	1	ILLEGAL SETTING
	1	1	1	ILLEGAL SETTING		1	1	1	SELECT TEST MODE
	4			**MODE**		**4**	**5**		**INPUT TYPE**
SW2	0			NORMAL	SW2	0	0		RS232/RS422
	1			SELF TEST		1	1		20mA CURRENT LOOP
	5	**6**		**INPUT TYPE**					
SW2	1	0		RS232/RS422					
	0	1		20mA CURRENT LOOP					

NOTE: 0 = OFF (DOWN)
1 = ON (UP)

Table 2 Interface Connector Pin Outs

J1 Supply In			J4, 5, 6 Serial Data Output	
Pin No.	**Function**		**Pin No.**	**Function**
1	+24V DC		1	Shield (earth)
4	24V RTN		3	RS232 Out
J2 Synchro and Encoder Heading Outputs			7	OV
Pin No.	**Function**		11	20mA Loop (+) out
1	Shield (Earth)		12	20mA Loop (-) out
2	26V 400Hz C Phase (R2)		18	RS422(+) out
3	26V 400Hz A Phase (R1)		19	RS422(-)out
4	S3	26V 400Hz 1:1 synchro heading output	**J7 Serial Data Input**	
5	S2		**Pin No.**	**Function**
6	S1		1	Shield (earth)
8	OV (Signal return)		2	RS232 In
12	Encoder heading o/p C		7	OV
13	Encoder heading o/p B		11	20mA Loop (+) In
14	Encoder heading o/p A		12	20mA Loop (-) In
15	+5v out wrt Pin 8		18	RS422 (+) In
J3 Rate of Turn Output			19	RS422 (-) In
Pin No.	**Function**		**J8 Speed Log Pulse Input**	
1	Shield (earth)		**Pin No.**	**Function**
2	(+)	Rate output to ROT meter 1mA FSD for 45°/min	1	OV
3	(-)		2	Log Input
7	ROT illumination (OV)		4	Shield (earth)
8	ROT illumination (+)		**J9 Gyro Fail**	
			Pin No.	**Function**
			7	Gyro fail contacts
			8	

TECHNICAL DATA:

Power Requirements

Voltage:…….24V dc ± 25%

Maximum Power Consumption:…6 Amps at switch on.

Performance:

Static Accuracy:……0.5° sec latitude

Repeatability:……0.25° sec latitude

Follow up speed:……100°/sec

Compensation:

Latitude:…… 80 °S to 80 °N

Speed:……...0 to 60 knots

Temperature:

Operating:…….0°C to +55°C

Storage:…… -10°C to +55°C

Signal Outputs:

S-type Heading Output:…….. 1 x step by step (TTL level)

Synchro Heading Output……1 x 26V 400Hz sector value 360°

Serial Data Heading Output:…… 3 x RS232

…….……3 x RS422

……..……...3 x 20mA Current Loop

Rate of Turn Output:……1 x rate of turn ± 45°/min (±1mA)

Signal Inputs:

Latitude:…… NMEA 0183 via RS232, RS422,

……20mA Current Loop

Speed:…….. Pulse or Contact Closure at 100, 200,

……or 400 per NM

……NMEA 0183 via RS232, RS422,

……20mA Current Loop